THE NAVY & MARINE CORPS AVIATION SAFETY MAGAZINE

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Approach

CFIT

CONTROLLED FLIGHT INTO TERRAIN

...into ground, water, towers, wires, or other structures with no prior crew awareness.

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Mishaps cost time and resources. They take our Sailors, Marines and civilian employees away from their units and workplaces and put them in hospitals, wheelchairs and coffins. Mishaps ruin equipment and weapons. They diminish our readiness. This magazine's goal is to help make sure that personnel can devote their time and energy to the mission. We believe there is only one way to do any task: the way that follows the rules and takes precautions against hazards. Combat is hazardous; the time to learn to do a job right is before combat starts.

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Front cover: Photo by Lt. Timothy Aja of HSL-46.

The Initial Approach Fix

Our Investigators' View

The good news is that business is slow for the investigation division. With only five Navy and Marine Corps Class A flight mishaps so far this year, we are having one of the best years for mishap rates. The bad news is that four of the five mishaps, which cost six lives and four aircraft, were related directly to failures in risk and crew-resource management. Experience wasn't always an issue: the aviators directly involved in these mishaps ranged from a fleet nugget to a squadron CO. The problem was failure to take the risk- and resource-management skills and knowledge learned in the classroom and apply them on a daily basis.

As highlighted in this magazine, time-critical risk management involves assessing a situation, balancing your resources and options, communicating your intentions, doing what you assessed as the right course of action given the situation, and debriefing lessons learned when the mission is complete. This simple process relies heavily on understanding the seven skills of CRM. Don't wait for the annual check ride to discuss CRM or risk management. Don't simply fill out the preflight ORM worksheet and consider risk management complete.

ORM and CRM concepts and processes should be applied on a continuous basis. Next time you brief the ready room on a mishap, make it a learning experience versus just the check-in-the-box. Use the lessons learned from those who have "been there, done that" to keep your unit 100 percent mission ready.—Cdr. Al McCoy, head aircraft mishap investigation division, Naval Safety Center.

Fatigue

Long days, longer nights, and not enough rest—sound familiar? Our data indicate that fatigue continues to be our nemesis. Just as you don't want your doctor to be making decisions about your health on their nth hour without sleep, our aeromedical docs don't want you flying or working on aircraft without proper rest.

Capt. Nick Davenport, head of our aeromedical division, has been doing a lot of research on fatigue in aviation. As part of an Approach (September-October 2007) focus issue on fatigue, he coauthored an article with Capt. John Lee, MC, on Assessing How Fatigue Causes Mishaps, p. 6. The issue is online at: http://www.safetycenter.navy.mil/media/approach/issues/SeptOct07/default.htm
In the May-June Approach, Capt. Davenport will update us on fatigue in aviation.

Safety Award Announcement

The Naval Aviation Readiness through Safety Award and the Order of the Daedalians' Admiral James S. Russell Naval Aviation Flight Safety Award for CY08 has been awarded to Commanding General Fourth Marine Aircraft Wing.

These awards are presented annually to the controlling custodian that has contributed the most toward readiness and economy of operations through safety. The command selected must have an outstanding safety record, an aggressive safety program, and an improving three-year safety trend.

Congratulations 4th MAW.

Bravo Zulu

Commands that submitted five or more hazreps during 1st quarter, FY09:

HS-6	VAW-120	VAW-123	VFA-32	VMM-266	VP-8	VP-45
VP-47	VT-10	VT-27	VT-31	VT-35	VT-86	TRAWING 1
TRAWING 2	MCAS Cherry Point	NBVC Point Mugu	USNS Rota Spain			

Commands that submitted four hazreps:

VAQ-129	VAQ-139	HSL-51	VFA-106	VP-30	VT-4
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Getting Control of CFIT

By Maj. Matt Robinson, USMC

Eliminating controlled flight into terrain (CFIT) continues to be a major challenge for many aviation communities. We can all stand to learn more about this problem, discuss it in our ready rooms, examine possible solutions, and improve preventive measures.

CFIT includes mishaps where an aviator crashes into terrain, water, trees, or man-made obstacles. CFIT occurs under two conditions. First, when the aircraft (or UAV) is controllable. Second, when the pilot actively is controlling the aircraft, or the pilot's ability to control the aircraft is reduced because of spatial disorientation. CFIT includes mishaps in which the aircraft is flown in controlled flight to a point where it no longer is possible to avoid unintended ground-impact, regardless of subsequent pilot reaction, such as ejection, or the aircraft enters a stall or spin.

CFIT doesn't include the following:
Hard landings near the intended runway or landing zone.

Aircraft departures from controlled flight that result in ground impact when the pilot could have reasonably avoided a CFIT before the aircraft departed.

Unavoidable ground impact because of system failure or malfunction.

Mishaps resulting from encounters with whiteout or brownout conditions.

Mishaps resulting from insufficient power.

What have we lost? Here's a list of CFIT mishaps within the last 10 years:

- HH-1N Crashed into the ground on routine training mission
- SH-60B Crashed in mountainous terrain
- FA-18C Crashed during night bombing mission
- UH-1N Collided with water during Day Landing Quals
- HH-60H Crashed during overland SAR mission
- FA-18C Struck ground while in a holding pattern
- CH-53E Struck water during NVD training flight
- FA-18D Struck radio antenna guy wire
- FA-18C Crashed into the sea after case 1 departure
- T-45 Crashed into the water out of break into CV pattern
- T-34C Struck high-tension power lines
- T-34C Struck power lines
- CH-46E Crashed into the water during night FCLPs
- KC-130 Crashed in mountainous terrain
- SH-60B Struck water during approach to the ship
- T-34C Crashed in mountainous terrain
- SH-60B Struck anchored vessel
- S-3B Crashed at sea
- SH-60F Hit water
- CH-46E Crashed in the desert
- AV-8B Crashed while on CCA final
- F-5 Hit terrain on return from training flight
- CH-46E Crashed into canal after wire strike
- UH-1N Struck ground during night flight

• AH-1W Crashed while conducting day urban CAS training
• AH-1W Main rotor struck tower
• UC-35 Struck ground during GCA
• FA-18A Struck power lines
• S-3B Crashed into uninhabited island during WESTPAC
• CH-53E Entered IMC and crashed
• CH-46E Struck aerostat balloon tether cable
• SH-60F Struck guide wire in flight
• TH-57C Struck power lines
• SH-60B Struck water on shipboard departure
• T-39N Crashed on low-level training flight
• AH-1W Struck water during Functional Check Flight
• MH-53E Struck radio antenna during night flight
• T-34C Struck mountain during VNAV lfight

To reduce mishap rate, efforts must be focused on identifying the primary causes, which in most cases is the human.

CFITs originate from a variety of situations. Common scenarios include inadvertent and intentional flight into bad weather, task saturation, complacency, inattention, ineffective instrument scan, and planned high-risk operations. Loss of situational awareness is another common scenario: crews lack awareness of their vertical position (altitude) and/or their horizontal position in relation to the ground, water or obstructions.

To reduce mishap rate, efforts must be focused on identifying the primary causes, which in most cases is the human.

CFIT has been one of the leading causes of mishaps in recent years and continues to be one of the most difficult problems to solve. In 2006, 14 percent of all Class A mishaps were attributed to pilot errors that resulted in CFIT. In 2007, when we had the lowest mishap rate to date, 17 percent of Class A mishaps were CFIT. In 2008, 11 percent were CFIT mishaps.

Inadvertent Instrument Meteorological Conditions (IIMC)

IIMC is when a pilot unintentionally flies into IMC (such as flying into clouds) while on a VFR flight plan, or when required to remain VMC. In these cases, the aircrew has failed in the decision-making process and no longer is "flying ahead of the airplane."

Ideally, IIMC is entirely avoidable through adherence to regulations and SOPs, good judgment, and thorough flight planning. In actuality, however, occasional IIMC is inevitable and occurs more frequently than some would care to admit.

Avoidable or not, we need a common set of actions that set up aircrew for success should they enter IIMC. We need to refine and enforce the directives, orders, SOPs, publications and resources devoted to avoiding IIMC. The only unacceptable course of action is to do nothing. As World War II Marine Corps ace Joe Foss said, "Ambivalence is weakness. Ambivalence is death."

If the aircrew is in compliance, exercises proper judgment, and mentally is ahead of the aircraft, CFIT is unlikely. However, scenarios occur where errors and lapses, coupled with unforeseen circumstances, force an aircrew into IIMC.

IIMC procedures initially are taught in primary flight training. The T-34 fixed-wing operating procedures (FWOP) and training wings teach you to level the wings and maintain straight-and-level flight for 30 seconds if you encounter IIMC. If you're still IMC after 30 seconds, begin a 15-degree AOB turn for 180 degrees and try to regain VMC.

Conversations with many of my colleagues and students indicate IIMC procedures frequently are confused with lost-plane procedures. However, you can find multi-aircraft IIMC procedures in almost every NATOPS pocket checklist and emergency procedure.

The following emergency procedures and briefing guide are a suggested starting point if your NATOPS lacks single-ship IIMC procedures. Why have these procedures as an EP? Because IIMC is considered an emergency, and it is a glaring indication the aircrew is "behind" the aircraft because of poor decisions. Having procedures in place will help the crew get through the situation.

The steps within the emergency procedure and briefing guide are based on what should be second nature: aviate, navigate and communicate. The first step when IIMC, like the lost-plane procedure, is to confess within the cockpit that the decision-making process has failed, the aircraft has been flown into a corner, and it is time to call up the emergency procedures. This action is a time-critical step. Confession must be made quickly, with dual concurrence and no wavering. Changing a course of action only will exacerbate the distress and result in delayed decision-making and increased risk.

When following the second and third steps (establishing an effective instrument scan, stabilizing the aircraft), remember that spatial disorientation is insidious when transitioning from an outside scan (or NVDs) to instruments.

Steps four and five are if/then and must be considered simultaneously. If the crew is confident of geographic orientation and is certain obstructions and terrain are no factor, then commence a standard-rate turn for 180 degrees. A 180-degree turn after 30 seconds should be made with care. If not VMC after one minute, go to step five.

Step five simply puts space between you and the objects that can kill you. You still are trying to avoid spatial disorientation. Several new concerns may arise, such as avoiding traffic. Why would you climb blindly into IMC? In the last 20 years, naval aviation has had 130 midair collisions. None were the result of a single aircraft climbing to avoid terrain during IIMC.

A descent makes the situation worse and is contrary to FAA direction. According to the FAA, "A blind descent in instrument conditions, hoping to see the ground before impact, is aviation negligence at its very worst." Always have a plan-of-action and leave yourself an escape route. Minimum safe altitudes should have been covered in the brief, according to the mission, operating area, and route of flight.

Step six will cause debate within your ready room. If there is any doubt, review FAR, part 91.155, and OPNAV 3710, Chapter 5. Entering the emergency code begins the process of clearing those pesky IFR aircraft out of your way. Furthermore, FAA ATC requires VFR aircraft encountering IIMC to declare "distress." Avoiding 7700 and requesting an IFR pick-up from ATC should remain an option. But, what guarantees radio reception and obstacle avoidance? How long will you continue into the goo while trying to find the frequency, appropriate agency, or even a response from that agency?

Suggested Emergency Procedure and Briefing Guide

1. Verbally confess.
2. Establish an instrument scan.
3. Stabilize and level the aircraft.
4. If confident of geographic position, then standard rate turn for 180 degrees. Note: Make your decision and/or direction of turn based on the last known location of obstacles and terrain.
5. If not confident of position, then climb to MSA.
6. Communicate. Squawk 7700 and contact ATC on 121.5 or guard (the FAA's preferred method of communication when IIMC).
7. Identify freezing level if you might be climbing through visible moisture.

Warning—Continued unintentional VFR flight into IMC conditions is an emergency and may result in controlled flight into terrain.

Communicating your dilemma to ATC is a good idea as you squawk 7700 and climb through who-knows-what. ATC might also help you out of the mess you have flown into.

If you don't place IIMC into your NATOPS as an emergency procedure, consider this briefing-guide template to set the groundwork for dealing with the situation. Is this contingency outlined in your squadron SOP or NATOPS? Or is the direction and gouge from flight school still used?

Warning System Aids

Ground-proximity-warning systems (GPWS) and terrain-avoidance-warning systems (TAWS) are finding greater acceptance after early technological problems. If continuing false positives plague your community, consider that the hazrep process has worked in correcting such errors; documentation is critical to improving the system. If you get GPWS and TAWS warnings, know your procedures and act.

Suggested IIMC brief points

1. Verbal confession procedures/criteria.
2. Time-critical issues.
3. No second guessing/committed.
4. Instrument scan responsibilities ("Aviate").
5. Flying pilot.
6. Non-flying pilot (if dual-piloted).
7. Spatial disorientation and geographic disorientation. During this transition is insidious. An immediate instrument scan is critical.
8. Stabilize the aircraft.
9. Level the wings.
10. Level the nose.
11. Center the ball.
12. Turn 180 degrees.
13. If confident in your geographic position and terrain/obstacle avoidance, initiate a standard-rate turn for 180 degrees away from last known position of obstacles and terrain.
14. Climb.
15. If unsure of geographic position or terrain/obstacle avoidance, and if not VMC after 180 degrees of turn and one minute, climb.
16. Identify minimum safe and obstruction altitudes.
17. Communicate on 121.5/guard—121.5 is the FAA's preferred frequency for IIMC.
18. Squawk 7700.
19. Consider freezing level.

CFIT Is Preventable

The causal factors and scenarios leading to these mishaps have differed very little over the past decade. From the online-survey results, fleet respondents strongly agree that a more comprehensive and structured training program for avoiding CFIT will reduce the number of mishaps. Consider a critical review (or ready-room debate) of your community's CFIT and IIMC procedures.

Maj. Robinson is an aircraft-mishap investigator with the Naval Safety Center.

Take Our Online CFIT survey

A CFIT survey has been online for two years. We'll continue to use your responses to gather fleet opinion of CFIT-avoidance technology, training and procedures. Survey results will be added to the online version of this article. The survey is at http://www.safetycenter.navy.mil/aviation/CFIT-survey.cfm

You can read an expanded version of this article, including an HFACS breakdown of the listed mishaps, at http://www.safetycenter.navy.mil/aviation/index.asp

NIGHT-VISION DEVICES: YOUR LEAST RELIABLE INSTRUMENTS

"Can NVDs be trusted?"

By LCdr. Thad Johnson

"Trust your instruments, trust your instruments, trust your instruments." That's an excerpt from the vertigo-disorientation portion of my NATOPS crew brief.

An accepted fact across aviation communities is that, under certain conditions, your body's physical perception of your surroundings is much more likely to fail you than your instruments. If you keep the attitude indicator level and near the horizon, the altimeter reading higher than the hard deck, and the airspeed under control, you will be OK.

Common practice, at least in the LAMPS community, is to brief night-vision devices (NVDs) as "just one set of instruments to be incorporated into our scan." This concept begs the question, "Can NVDs be trusted?" I say no. NVDs are a miraculous invention that could make almost every evolution safer, but sometimes they don't because too many pilots rely too heavily on them.

Since NVDs came online more than a decade ago, attitudes about them have been varied and often evolving, usually with a correlation to experience with them. As a LAMPS department head, I'm writing from the perspective of someone who has deployed with and without NVDs. Most of my peers are in the same boat. My CO has worn them only a couple of times. *[This situation would differ in communities where COs deploy.]* My XO is an exception; as a former weapons and tactics instructor, he has deployed with them.

Most of our first fleet-tour HACs don't see any reason why anyone would fly at night without them, and the H2Ps have adopted the same attitude. Working with Marines on the LHD, we *always* were configured for NVDs. No one can argue with the enhancements NVDs provide, but for more than 10 years, debate has continued about to what extent we should rely on NVDs. Should we maintain unaided night currencies? If I lapse on unaided night time, can I still fly on goggles? At what point on the approach to a ship do I transition to a visual scan? Some of the answers have been written down, and some have not. A draft, combining HSM/HSC H-60 NATOPS, is slated to eliminate any unaided night-currency requirements. Night time with NVDs will be considered the same as unaided night time.

I may have lost some of you because I seem to be the classic traditionalist: "I did it this way, so you should too." Not the case. I value NVDs. I don't see many reasons to fly at night without them. I'm even in favor of eliminating unaided currency as our draft NATOPS states. I'll admit I don't like the hot spots they give me in my helmet, nor the fact they make everything look green. But, they practically turn night into day, and they can make almost every evolution safer.

NVDs are not just another instrument, though. NVDs provide advantages and disadvantages. None of your other instruments do that. NVDs let you see hills and valleys where your eyes see darkness, but they also create illusions you never would have seen otherwise. Your instruments give you nothing but the facts. NVDs provide a good picture of the ship and its flight deck, which is extremely helpful—until you are over the deck. Then they restrict your peripheral vision from the cues to which you are accustomed.

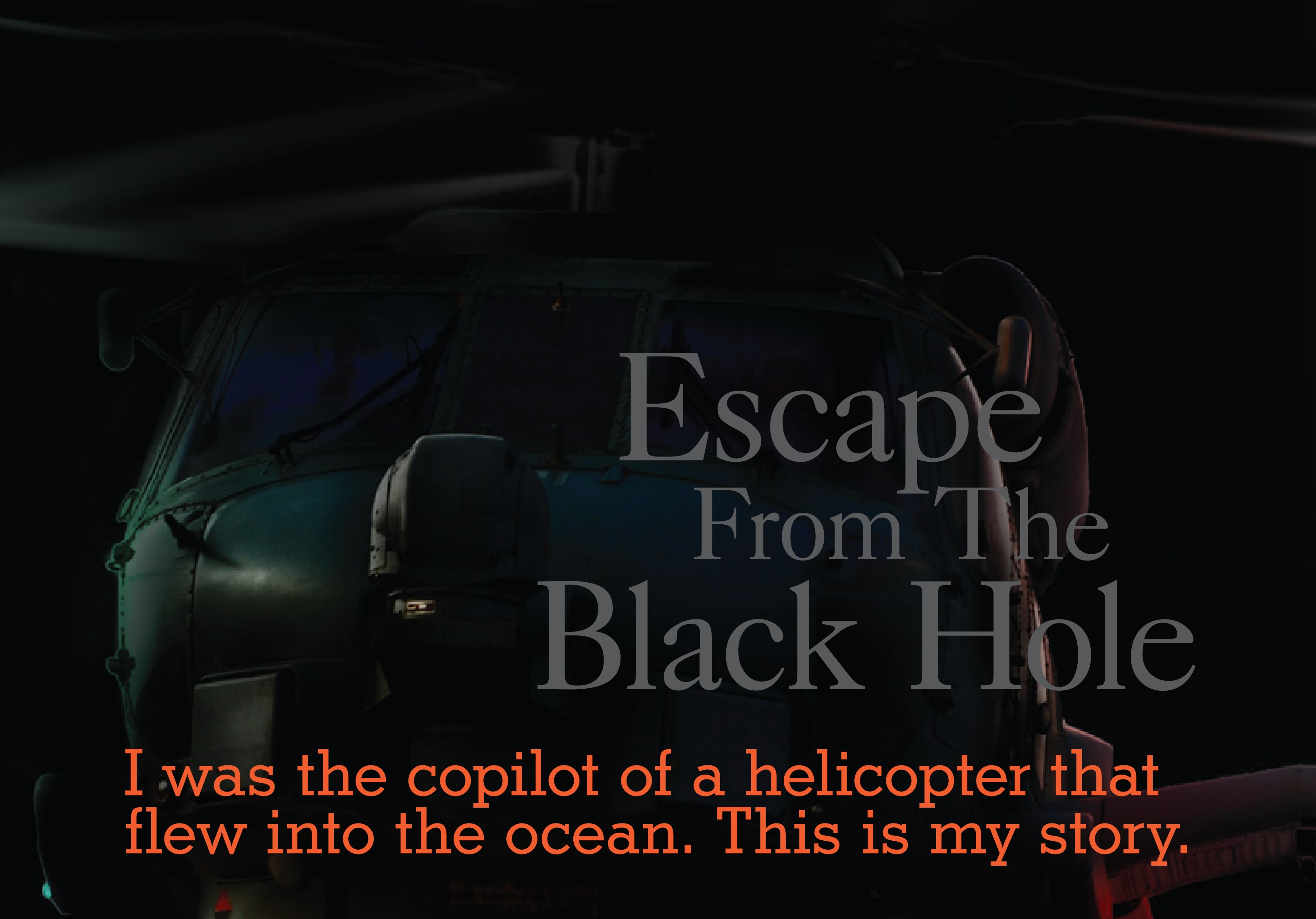
I've been on goggles over the back of the ship and perceived myself to be drifting all over the place, but we were stable. Instead the ship was rolling. My scan was slow, and the tubes I was staring through restricted my view of the horizon-reference system (HARS) and the actual horizon.

Goggle performance varies with environmental conditions. I've recently taken off on a moonless night and realized my body's misperception of wings-level (probably because of the power pull) was exacerbated by a faint diagonal glare that only looking through my goggles could pick up on the windscreen. I trusted the real instruments, leveled the wings on the attitude indicator, and flew through it. Short of a lightning strike or an inadvertent flight into some heavy icing, my instruments will not change with the weather.

Most of our recent LAMPS CFIT events occurred on takeoff or landing from the ship when the crews were unaided. This situation implies that NVDs would have prevented those mishaps. We never will know. These events also have occurred on nights without any visible horizon. There seems to be a misperception that NVDs nearly always gives you a horizon, but it is important to note, zero-percent illumination doesn't get magically enhanced to something more. NVDs become a useless distraction in those instances, especially if they are being incorporated as a part of an instrument scan. On the other hand, all CFIT mishaps were preventable by keeping the wings level, nose on the horizon, and altimeter reading above the hard deck.

Like many *Approach* articles, there's nothing new here. Everything should have been covered in the NVG curriculum or the NVG night-lab refresher. The problem is, I still catch myself, or I look over at my copilot a mile from the back of the ship and see him straining to see his lineup through his goggles. He doesn't need goggles right now. He needs instruments—ones he can trust—the BDHI and AI, which are located right under his nose. The problem is that he can't see them under his goggles.

LCdr. Johnson flies with HSL-49.



Escape From The Black Hole

I was the copilot of a helicopter that flew into the ocean. This is my story.

By Lt. Josh Peters

We just had passed the midway point of my first deployment, conducting counter-narcotics operations aboard USS *Curts* (FFG-38) in the eastern Pacific. During the first three months of cruise, we had flown almost exclusively during the day. The relatively small percentage of night hours I did have were day-into-night flights, and we had landed within one hour of sunset, known as "pinky time."

A combination of scheduled port calls and unscheduled port visits for ship's maintenance had affected our training. All three helicopter aircraft commanders (HACs) in my detachment were within a few days of their night- and deck-landing-qualification (DLQ) currency expiring. Also, in the 37 days before my mishap, I had flown only three flights: two day flights and one day-into-night transition flight that included two night, shipboard approaches for my HAC, but none for me.

The day of my eventful flight started at 0520, when I manned-up the LSO shack for the first launch of the morning. I never did get a nap before my 1630 flight brief. The flight schedule called for a day-into-night event, followed by a hotseat into a night, night-vision goggle (NVG), DLQ event. The crew for the last event was the detachment officer in charge (OinC), our most senior aircrewman, and myself. The fact I would be pushing an 18-hour crew day was mentioned in our brief, but my zeal to "get the X" got the best of me, and I said I was "good to go."

Both crews briefed together because we would share the same aircrewman. The plan for my event was to conduct night DLQs immediately after takeoff, fly surface-search coordinator (SSC) for a couple of hours, then complete the NVG DLQs. The NATOPS brief for the first event was given by the H2P. When briefing the line item "Instrument Approach Techniques/Assistance," her exact words were "standard shipboard instrument approach." That was it. This level of briefing had been the custom on our detachment. Also, we didn't adequately brief the risks associated with our lack of proficiency after such a long period out of the cockpit.

As I walked onto the flight deck for the hotseat, I noticed how dark it was: no moon and a high ceiling that would have obscured it anyway. The sun had set over an hour-and-a-half earlier, so there'd be no pinky time. I plugged into the ICS station in the cabin and listened as the offgoing HAC (our detachment Ops O) turned over the aircraft to my OinC.

"It's really dark out there, Boss," said the Ops O, "but I think I can make out a slight horizon."

This situation was significant because our ship's stabilized, glide-slope indicator was inoperative, and NATOPS only allows night flight ops with a degraded lighting system when a natural, visible horizon is present. However, because our Ops O and OinC were very concerned with night-currency requirements and readiness levels, we had a tremendous amount of perceived pressure to complete the flight. We didn't want the OinC's night and NVG currencies to expire.

After the turnover, I hopped in the left seat, completed the takeoff checklist, and called for chocks and chains. With my OinC on the controls, we lifted for a port takeoff. On deck, we had decided he would make the first approach, then we would swap controls each pass until we had the required number of approaches and landings. As we pedal-turned away from the flight deck, and all lighting from the ship escaped our view, we were confronted with an inky, black darkness devoid of any horizon. I know it sounds a little melodramatic, but I was a relatively inexperienced H2P with only about 400 flight hours under my belt, and this was as dark a night as I ever had seen.

I felt a sharp jolt, as the tail section of the aircraft hit the ocean.

A "normal approach" starts at 400 feet, so this was our intended level-off altitude, but my OinC leveled off at 300 feet. I pointed out his altitude, and he announced a climb to 400 feet. He pulled in power but did not arrest his ascent until our aircrewman said the aircraft was climbing through 500 feet. My HAC again acknowledged he was not on altitude, and we descended to 400 feet. These errors should have been my first clues that the Boss was not on his A-game that night.

As we intercepted our base-recovery course (BRC) at 1.5 miles from the ship, both of us commented on how dark it was. At 1.2 DME and 400 feet, my OinC commenced his approach, descended and slowed. We noted the magnetic variation (magvar) given during our flight brief appeared to be incorrect, because with our CDI centered, we didn't think we were flying directly up the ship's stern. I didn't give our heading much thought at the time, considering that, through three months of deployment, I had observed the ship's magvar numbers usually were inaccurate. Our custom had been to continue on approach and refine our dialed-in BRC visually by cues from the ship's wake or flight-deck markings. Because we couldn't see the ship's wake, we looked outside to spot the ship and get on lineup. We were on an instrument approach, with both of us primarily on visual scans.

The "normal approach" in NATOPS calls for the aircraft to be 200 feet at .5 DME, but we were high, around 240 feet. NATOPS does not offer guidance on the desired approach airspeed at the .5 DME checkpoint, but our detachment typically had been shooting for 50 knots of closure. We were at 60 knots at one-half mile. My OinC said he was high and fast, so he reduced collective and applied aft cyclic to "get back on the numbers." Both of us continued to look outside to find the correct lineup.

Here's how we got into the black hole. We were high and fast, and our corrective input was to reduce power and increase our nose up. We had caused our airspeed and altitude to bleed off rapidly, and our poorly disciplined instrument scans made sure power was not reapplied in a timely manner. These actions quickly gave us a low-and-slow approach, with a rapidly increasing descent rate.

At one-quarter mile, where NATOPS calls for 125 feet, our aircrewman began to make rapid-fire altitude calls: "100 feet… 70 feet… 50 feet… 30 feet."

Before I realized what these calls meant, I felt a sharp jolt, as the tail section of the aircraft hit the ocean.

The OinC and I immediately pulled up the collective to our armpits in an attempt to climb. With a full tank of gas, our rotor drooped to about 90 percent, but we kept a positive rate of climb and got out of the water. I thought we were directly behind the flight deck and about to slam into it.

With the low-rotor rpm light flashing in my face, I made forceful ICS calls: "Come left, come left!"

I later learned we were just outside one-quarter mile from the ship, about 500 yards away. With the maximum amount of power our engines would give us, we skyrocketed up to 800 feet. I took the controls, and we confirmed all aircraft systems and instruments were operating normally. Fortunate to be alive, we landed on the ship and shut down.

The stabilator, tail bumper, and tail wheel had entered the water. Both stabilator panels were dented badly and would need replacement. The end result was a Class C flight mishap.

Poor instrument scan, spatial disorientation, and a loss of situational awareness by both pilots caused this mishap. Complacency, overconfidence, poor decision-making, and perceived pressure to complete the event combined for shoddy ORM and CRM and nearly cost me my life.

During the ORM portion of our crew brief, we hadn't adequately discussed and analyzed all the hazards for our flight. Because we had not flown very much over the previous month, we should have realized our skills, especially our instruments scans, would not be at the same level as during the first part of cruise. According to the NATOPS instrument-flight manual, "Aircraft mishaps due to spatial disorientation almost always involve a pilot who has very few flying hours in the past 30 days." It adds, "Flying proficiency deteriorates rapidly after three or four weeks out of the cockpit. Vulnerability to spatial disorientation is high for the first couple of fights following a significant break in flying duties." They were right about that one.

During our brief, we hadn't noted our prolonged absence from the cockpit as a significant hazard, nor did we discuss the risk of our heightened "vulnerability to spatial disorientation." Had we discussed these items, we probably would have concluded that rolling right into unaided DLQs on a dark night was not the best idea. The prudent plan would have been to fly for two-and-a-half hours to build up our scan proficiency, and then conduct the DLQs on the backend of the flight. However, even if it had been proposed, I believe this plan would have been rejected, because my OinC was focused on making sure neither his unaided or NVG DLQ currency expired.

Another hazard we mentioned but did not brief adequately was night shipboard approaches. "Shipboard ops" were mentioned as a risk during our ORM brief, and the mitigating measures were to "back up each other" and "call power if we get low." Had our ORM and NATOPS briefs been more clear and specific on the criteria for calling for power or initiating a waveoff, I do not believe we would have hit the water.

It's easy to sit in the ready room and say, "I never would have let the aircraft get so low." Or ask. "Why didn't he just call for power?" Take it from me; we went from 100 feet to the water in what seemed like half a second. In the time it took me to hear my aircrewman call, "50 feet… 30 feet," process where we were on the approach, and decide if I should pull power or not, we had hit the water. If we had briefed "no lower than 50 feet until we are approaching the deck edge," I think

I reflexively would have pulled power at the mention of "50 feet" and kept us out of the water. If you set a specific number or specific criteria for a maneuver, and then brief that specific criteria everyday, you'll act instinctively. You won't need any time to think about calling for power.

Even after our poor ORM and NATOPS briefs, other decisions were made that, had they gone the other way, could have prevented our mishap. After my HAC leveled off at 300 feet, instead of 400, I should have recognized that his instrument scan and situational awareness were not where they needed to be. Also, throughout the approach, neither of us called out our scan responsibilities, as required by NATOPS. As soon as the HAC stated "on approach," he should have called out "I'm on instruments," and when he didn't, I should have challenged him on it. Instead, both of us looked outside, rather than inside at our instruments. Our focus on finding the correct BRC to dial into our CDI allowed us to descend into the water.

One last thing that I believe set us up for failure was the approach itself. The SH-60B NATOPS details two types of shipboard-instrument approaches: the "normal approach" and the "alternate approach." The normal approach starts at 1.2 DME, 400 feet, and 80 knots, and requires the pilot to hit a series of five altitude-distance checkpoints as they descend and decelerate. NATOPS has no speed standardization information other than the starting speed of 80 knots indicated. This approach requires continual power adjustments and a highly attentive instrument scan.

The alternate approach starts at 1.5 DME, 200 feet, and 80 knots. This approach has the pilot make a level deceleration until arriving at .5 DME, 200 feet, and approximately 50 knots. At this point, the pilot can switch to a visual scan and acquire the stabilized glide-slope indicator and the flight-deck environment before beginning to descend.

The normal approach has been the unquestioned LAMPS standard for years. From my initial DLQs at the FRS, through predeployment work-ups, and during this deployment, I only had flown normal approaches. I never had heard of anyone doing an alternate approach. However, on the dark night of my mishap, it would have been wise to consider that NATOPS states the alternate approach "reduces aircrew workload, particularly in night or IMC conditions, by eliminating the requirement to maintain a constant rate of descent throughout the approach."

Let's revisit this last sentence. If the alternate approach "reduces aircrew workload," then that would mean, conversely, that performing the "normal" approach increases aircrew workload. Why would anyone want to increase their workload when doing something as challenging as landing on a small, pitching flight deck on a dark night? I never considered suggesting the "reduced workload" alternate approach. Since that night, I only have done alternate approaches. I think every mention of the normal approach in NATOPS should be abolished. *[Currently the SH-60B NATOPS "Normal" and "Alternate" shipboard approaches are under review.—Author]*

We hit the water because both pilots' instrument scans broke down. Flying, especially instrument flying, is a perishable skill. If you haven't flown for an extended period of time, attempting challenging evolutions immediately after takeoff, like night shipboard approaches, probably is not the best idea. Be clear and specific in your NATOPS briefs, and leave as little room as possible for ambiguity or interpretation.

Just because you have made 100 shipboard landings in the last three months doesn't mean the next one won't kill you.

Lt. Peters flies with HSL-49.

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Photo by MCS3 Kathleen Gorby.

Power! Power! Waveoff!

By Lt. Todd R. Matson

I was on a typical flight over Afghanistan, about halfway through our six-month deployment. We had seen little port time and had spent a lot of time conducting operations-at-sea in OIF and OEF.

My copilot and I had noticed the angle-of-attack (AOA) gauge was frozen on our trip into country. I added a little power, and the AOA started to work again, so I set mission profile and continued north. I thought we might want to do a straight-in approach when we got back, just as a precaution. However, because we had an uneventful flight, I forgot about the AOA problem.

After returning to the ship and getting into the overhead stack, my copilot and I focused on finding our interval and expected Case I landing. This scenario may sound simple, but with most flights on cruise being night flights, day landings seemed to require more focus than usual. I briefed my copilot on what backup I wanted, and we headed for the initial.

The last one to come down, I decided to go at least one mile before I broke. I tried to set up for success as much as possible. The break was uneventful, and by the time I reached the abeam position, everything seemed normal. I compared my AOA and airspeed before making my approach turn. Then things started to go wrong.

At the abeam, my airspeed tracked nicely with my AOA, so I shifted focus onto my indexers and began an approach turn. I got a little overpowered and showed a red chevron, so I took off some power and looked outside to see how the turn was working out. Still overpowered, I took off more power, as I rolled into the groove. When I rolled wings level, something didn't feel right, and just then, the LSOs saved my crew's life.

I saw the cut lights, which immediately were followed by, "Power! Power! Wave off!"

I responded to their calls, but from inside my cockpit, I had no idea why I had gotten a waveoff. It wasn't until my power levers hit the max detent and the AOA gauge broke free that I understood. The AOA gauge showed us at 24 units—the Hawkeye stalls at around 26-units AOA.

My copilot and I decided a straight-in was a good idea, and we requested that from paddles. We also explained our situation, and they talked us down in the next approach.

Here's the lesson I learned: A small problem during a flight can manifest itself at just the wrong time. In the Hawkeye, the rudder shakers activate at 26-units AOA, but because the gauge was not tracking at all, the first indication of a stall would have been airframe buffet, followed by a stall. This situation could have happened at a position behind the boat we couldn't have recovered from.

This experience also reinforced to me the importance of the LSOs and why we need to trust them. They saw our plane in an underpowered position and did the right thing to get us away from the boat.

After the flight, the maintainers said they found the AOA probe was bad, which is why it failed. They replaced the probe, and the problem was solved.

My crew walked away from this flight with a newfound understanding about why all members of a multicrew aircraft need to back up each other during the entire flight. My copilot and I back up each other on airspeeds during the approach; in addition, the CICO checks his airspeed gauge.

Lt. Matson flies with VAW-117.

An Abrupt "Bend" to the Army-Navy Game

By Lt. J. D. Duffie`

Pregame ceremonies for last December's Army-Navy football rivalry kicked off with both services executing a series of flybys and spectacular parachute demonstrations in support of their respective alma maters. I was fortunate to represent the Navy, along with three fellow Naval Academy alumni, roaring over the stadium in the diamond formation of four FA-18E Super Hornets from the Kestrels of VFA-137. The mighty midshipmen fought to the end with a remarkable victory; however, my story ended abruptly with a very somber mishap during the return flight to NAS Lemoore, Calif.

During our Sunday morning preflight planning, we realized a major weather front located across the northern part of the country would force us to take a more southern route than planned. We took an extra 30 minutes of flight planning to determine our best route of flight, considering weather and fuel. Our first leg would take us from Andrews AFB to Barksdale AFB, Shreveport, La. The second leg would take us to Albuquerque, N.M.,, and the final leg would get us home to NAS Lemoore.

The lead was a senior lieutenant with almost 1,000 Hornet hours and multiple cross-country experiences. I was Dash 2 with nearly 600 Hornet hours, so we were an experienced section. Startup, takeoff and departure went as briefed. We arrived at FL280 about 15 minutes after departure. Weather was clear above us, with the layer at FL280, plus or minus 1,000 feet, which forced me to remain in tight parade formation. I wanted to keep sight of lead because we were in and out of the clouds.

The flight of three other Kestrels were nearly 30 miles ahead. They requested a climb to FL430 to get above the weather and avoid commercial traffic from FL290 to FL390. If another reason was needed to justify a climb, 100 knots of headwind fed the need for a more fuel-efficient altitude in lieu of a descent. After

talking on the back radio with the flight in front, we made the same request to climb to FL430.

The climb took about 15 minutes with a very conservative rate of climb. Once at altitude, I set the autopilot and autothrottles, so I could check my navigation charts and review the route of flight. About 10 minutes after level-off, some serious environment-control-system (ECS) surging began. The airflow in the cockpit blew the charts out of my hands and made a very loud whirlwind sound in the cockpit—like the effects of a Pensacola hurricane. These conditions abruptly ceased after three to four seconds with an eerie silence and a very uncomfortable pop in both my ears. Unsure of what just had happened, I quickly swept the cockpit for switches in their correct position. It isn't uncommon to have an unsecured flight bag or pubs accidentally adjust the airflow valve that regulates airflow between the windscreen and the pilot vents. After a quick scan, all ECS-related switches were confirmed in their correct positions.

I then made my first radio transmission to flight lead to tell him of my situation.

"Falcon 91 from 92," I called.

"Go ahead," wing replied.

"Just for your info, I've got some serious ECS surging in the cockpit and still trying to troubleshoot."

Lead responded, "OK, just let me know if you need something."

I responded, "Roger."

As I gathered the charts and stuck everything back into my helmet bag, I again experienced surging, loud winds, and popping in my ears several more times over the next few minutes. In the time it took me to recognize and evaluate the first surges, check the switches, and make a call to lead, I had been decompressed and recompressed 12 times. The severity of the decompressions was unknown because

I had not yet checked the cabin altimeter—the most important instrument in this situation. With its inconvenient position near the floor between my legs, it wasn't part of my scan.

When I finally checked the cabin-pressure gauge to see if it had steadied, another surge occurred. I couldn't believe it when I saw the cabin pressure jump from 18,000 feet on our nondigital, barostatic gauge, to 38,000 feet and quickly return to 18,000 feet. I immediately contacted lead and told him the pressurization was not stable, and we should descend. NATOPS procedures for a loss of cabin pressurization calls for the following three steps to be done, in order, from memory:

1. Emergency oxygen green ring—pull.
2. Oxygen-flow knob—off.
3. Initiate a rapid descent below 10,000-feet cabin pressure.

I executed the first two steps of the procedure while lead requested air-traffic control (ATC) for the third—a descent out of altitude that would take us through some very busy commercial airways.

The surging in the cockpit continued as we were cleared to leave FL430. I didn't declare an emergency at the time of request, because I had not yet determined if the system had failed completely or just was having a hard time at altitude. I wanted to see what would happen once we got to a lower altitude. During the descent, lead and I quickly discussed what this action might do to our fuel consumption.

As we arrived at FL280, our flight-performance-advisory system (FPAS) showed we would arrive at our destination with 3,000 pounds of fuel, just enough to make it to our divert field if needed. The surging now had stopped, and the cabin altitude read 10,000 feet. I turned back on the on-board oxygen-generating-system (OBOGS) flow and secured the emergency oxygen with the cabin pressure now within the limits, so I would not deplete the emergency oxygen.

My ECS now was working, and I told lead we should continue as planned to avoid getting ourselves into a fuel problem. I then dug deeper into the pocket checklist (PCL) to read the notes about to decompression sickness (DCS). The procedure states, "If DCS symptoms are present, land as soon as possible, if not, land as soon as practical, and maintain altitude below 25K."

Considering that the symptoms included paralysis, choking and/or loss of consciousness, I quickly ruled out DCS. Other symptoms, such as pain in joints, dizziness and tingling sensations were not present, so I assumed I was fine.

After another hour of flight, we were about 30 minutes from our destination. The failure to inform lead of what I had experienced and the early assumptions I had made could have led to disaster. My body began to react to the decompression with symptoms I was unfamiliar with, and nothing like those experienced during hypoxia simulation in the altitude chamber. When asked if I felt hypoxic, I quickly responded, "No, I just think the decompressions messed with my sinuses. I don't feel good." This statement convinced lead that I was fine and we could continue. Considering our experience level, he felt he had no reason to second-guess the situation, as we started our approach.

I couldn't believe it when I saw the cabin pressure jump from 18,000 feet on our nondigital, barostatic gauge, to 38,000 feet and quickly return to 18,000 feet.

I felt lethargic, confused and thought of "crying uncle," without knowing how to say it. I was short of breath, so I pulled the emergency oxygen to see if it would remedy the sensations I felt. I remember asking lead to back me up in the descent. I didn't think I could land the aircraft. I had convinced myself and flight lead only minutes earlier that I was fine, and we could deal with my situation once we got on deck. A few more words were passed in the next couple of minutes that I can't recall but resulted in a lead change for the descent through some cloud layers. I recall having tunnel vision and staring through the HUD, anxiously waiting to punch through the clouds without any regard to altitude. I was fortunate our level-off altitude ended up being several thousand feet below the highest cloud layer.

We requested flight separation shortly after leveling off below the cloud layer for individual, visual, straight-in

approaches. Again, no communication was passed about how much I struggled to just make simple decisions, such as turning the aircraft or talking on the radio. I maneuvered my way through the hazy leftovers of a recent rainstorm but didn't recall slowing for the approach, or getting into the landing configuration. I didn't realize I was set-up for the approach until I was lined-up on what appeared to be a very small runway—the wrong runway—10 miles from my intended point of landing. I quickly was given a vector and found the correct runway at my 1 o'clock and readjusted my approach to it.

I don't recall the communications with ATC, but I must have been following their instructions. I was forced to go around because of the lack of runway separation behind my lead. I tried hard to focus and listen to tower's instructions. I stared at several new cautions on the digital-display indicator (DDI), one of them being a low-fuel caution. It now was me and the runway; I just wanted to get on deck. I landed without incident.

My eventual collapse in base operations shortly after shutdown, combined with the discussion between the two flight leads, resulted in a quick phone call to the medical response team at Barksdale AFB. I was put on oxygen, placed on a gurney, and rushed to a local emergency room. I found myself on another flight in the recompression chamber to reverse the effects I had suffered. Decompression sickness, or "the bends," is most simply explained as nitrogen bubbles that expand and block blood from getting to your organs, extremities, and even your brain. After four and a half hours, my body recovered, and I was released from the hospital.

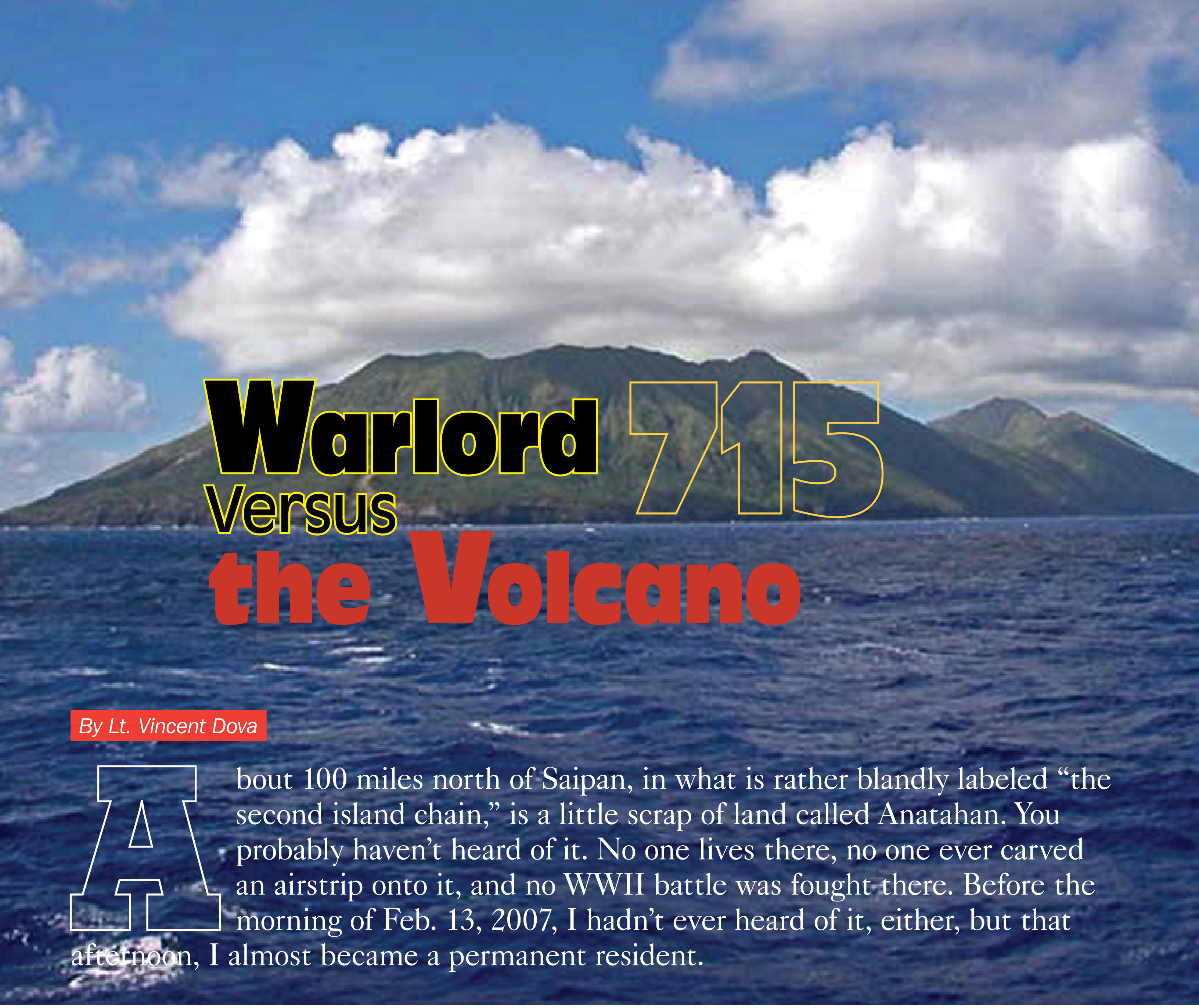
When I think back to that euphoric weekend, I realize how badly things nearly got and how they almost became the highlight—or, more accurately, lowlight—of my naval experience. I remember the call from tower to trigger my attention, the master caution, and the aural tone that focused me for just a moment and took the holes in the Swiss cheese out of alignment.

Those of you reading this may think that "the bends" only happen to scuba divers or rarely to a pilot. The bottom line is we are not as invincible as we think we are. You may convince yourself the odds are on your side, or just don't ask the questions of your flight lead or senior aviator because of pride or lack of information. When it comes to hypoxia or DCS, my advice is always to assume the worst. In aviation, some say, "Better safe than sorry." Others say, "Better to be lucky than good." I say, "Better to be good and safe."

Lt. Duffie`flies with VFA-137.

Type II decompression sickness, the type which includes injury to the central nervous system, can result in incapacitation, leading to loss of the pilot and aircraft in a mishap, as it almost did in this event. Type II DCS is quite rare in the aviation environment, but when it occurs, it is a life-threatening condition that can result in permanent neurologic injury or death. Emergency treatment in a recompression chamber is the only effective therapy, and this aviator was fortunate to maintain sufficient control to land and receive emergency recompression in time to avoid permanent neurologic damage.

His story also illustrates the problem with anything that affects mental function while flying, such as hypoxia, carbon-monoxide poisoning, fatigue, or Type II DCS: The individual becomes less and less aware of his deteriorating performance as it develops, and becomes less and less capable of solving the problem. When in doubt, jump on the solution while you still can. In the case of DCS, get on emergency 100-percent oxygen, land as soon as possible, and seek emergency medical care—that's the best therapy available to the aviator.—Capt. Nick Davenport, aeromedical division head, Naval Safety Center.



Warlord 715 Versus the Volcano

By Lt. Vincent Dova

About 100 miles north of Saipan, in what is rather blandly labeled “the second island chain,” is a little scrap of land called Anatahan. You probably haven’t heard of it. No one lives there, no one ever carved an airstrip onto it, and no WWII battle was fought there. Before the morning of Feb. 13, 2007, I hadn’t ever heard of it, either, but that afternoon, I almost became a permanent resident.

We barely were a week into a spring work-up, underway with the *Ticonderoga*-class cruiser USS *Shiloh* (CG-67), and HSL-51. Det 4 was getting up to speed with a mostly brand-new lineup of pilots, including me. Our OinC also was new to the det, as well as to the forward deployed naval forces in Japan and the Pacific.

To say things were going well would be an understatement; we were having a grand ‘ol time. We had a rock-solid bird with two strong engines, an experienced group of maintainers, and the ship was steaming at a leisurely independent-ops pace, giving us time for all the training and bounces we wanted. We were having at least 10 percent more fun than Navy regulations generally allow. Maybe that’s how we got into trouble in the first place. Now that I think of it.

A few days earlier, we had had the chance to scope out Iwo Jima and Kito-Iwo Jima from the air, whetting our appetite to explore the Pacific in the process.

We checked the charts on the morning of our flight and identified the closest dry land to be a small island well north of Saipan, called Anatahan. What caught my eye was the contour line marked “crater,” elevation 1,700 feet MSL. I said if we happened to find ourselves in that general vicinity without an urgent tasking from the ship, it might be something worth checking out. The Boss agreed, and I made note of the island’s lat-long on my kneeboard.

As we approached the island, we quickly realized why Anatahan never was going to be a popular resort destination. No white sandy beaches and swaying palm trees were here, just grey-brown volcanic rock, jutting out of the water.

After we visually had identified everything within our sensor range, we still had more than two hours before our recovery time. Figuring we could squeeze in a little sightseeing with the rest of the training we had planned, I suggested, "Why don't we go check out that island?" It was about 80 miles away.

The ship was cruising in that direction, and the overcast ceiling was high, which allowed us to climb for good comms range. The Boss weighed in, saying that as long as we could stay in radio contact with mom, he was more than happy to do a little sightseeing. We all agreed, and the issue was settled.

About 45 uneventful minutes later, the jagged outline of Anatahan emerged before us out of the tropical haze. Our shipboard controller's voice on the radio was growing weak and starting to break up. The ceiling had crept down to about 2,500 feet, which prevented us from climbing. If we kept going toward the island, we would lose radio contact.

At that point, in all prudence, we should have turned around and adhered with our stated risk control of remaining within comms range. But of course, it goes against human nature to turn around when the goal you've been driving for finally is within sight.

"Just a little farther. It's right in front of us. We can make it around and back in 10 minutes—no problem," we thought.

We told our controller we might be NORDO (no radio) for a few minutes while we swung around the far side of the island, and we would report back up when in range. What was the harm anyway? It's not like the ship didn't know exactly where we were.

As we approached the island, we quickly realized why Anatahan never was going to be a popular resort destination. No white sandy beaches and swaying palm trees were here, just grey-brown volcanic rock, jutting out of the water. There were no level areas to speak of, and the entire surface of the island was deeply creased with muddy runoff lines. A few pathetic little green shrubs clung to the ridges here and there, but other than that, we might as well have been flying over the surface of the moon.

As we cruised up the northern flank of the island, we saw a low spot on the uppermost ridge: the crater I had seen on the map. We didn't see any smoke or activity, so we decided to go up for a look. Contingency power was brought up as a precaution. We noted the winds and scanned the gauges for any reason why we shouldn't proceed. Other than the lack of comms, we had no red flags to say "turn around now," so we proceeded up and over the ridgeline.

We were greeted by a convincing mock-up of the outer gates of hell, complete with bubbling puddles of ash-gray mud and an evil sulfur smell that quickly filled the cockpit. As awe-inspiring as it was, none of us felt inclined to linger very long. In just 10 seconds, we cleared the far side of the crater.

Less than 30 seconds later, while we still were waxing rhapsodic about the savage beauty of the planet we live on, my master-caution panel lit up. I looked at the central-caution display, fully expecting it to be yet another anomalous stability-augmentations-system hiccup, which I quickly could reset and forget about. Instead, the offending amber cube turned out to be one that I had not seen illuminated since I did my last emergency-procedure (EP) sim at the FRS: "TAIL XMSN OIL TEMP." In the simulator, this little gem usually immediately was followed by loss of tail-rotor drive.

We were greeted by a convincing mock-up of the outer gates of hell, complete with bubbling puddles of ash-gray mud and an evil sulfur smell that quickly filled the cockpit. As awe-inspiring as it was, none of us felt inclined to linger very long.

My harness was locked, and I had whipped out the emergency checklist in record time; of course, I already knew what this particular EP read: "1.) Land as soon as possible. If failure imminent: 2.) Land immediately."

Given that the NATOPS definition of "land as soon as possible" is clear about choosing the first place a safe landing can be made, we were in a hard-luck spot. A scan of the island confirmed no truly safe landing site was to be had; even a survivable crash-site would be hard to find amid the craggy, hellish terrain.

If the nose started to swing out on us, or we got other secondary indications we were about to lose the tail rotor, the decision would be made for us: We'd have to take whatever we could get. On the other hand, if no secondaries developed, we were faced with an agonizing choice: Try to land on Anatahan, or fly across 80 miles of open ocean to reach our ship. Saipan was farther still, and in the opposite direction.

About a minute into the EP, we had no further indications of failure, and we had to make our choice. A quick check of comms with the ship resulted in no joy. Option one was to force some semblance of a landing onto the jagged island terrain. We would be stranded on a barren volcanic rock for at least 24 to 48 hours and most likely would have a total airframe writeoff—not a pleasant proposition. Of course, this option would have looked like a good choice in retrospect, if we had ended up ditching on the way back to our ship. But, a ditch was far from a certain outcome. Option two was to RTB to the ship. With as levelheaded a cockpit discussion as you could imagine, we noted the caution light was "flickering" and not steady, possibly calling into question the validity of the warning it conveyed.

"I think it's just a bad sensor," Boss announced, his normal calm starting to reassert itself. Our aircrewman and I were inclined to agree, but maybe that was because neither of us felt like starring in "Survivor: Anatahan."

We already were headed in the right direction to intercept the ship's track, so the decision we ultimately went with already was half made; we merely committed to it. While Boss gingerly coaxed the helo upward to gain line-of-sight for comms, using minimum power required to climb, I made sure we had a good steer home and started to prep for a possible wet egress.

Once at altitude, just below the overcast, we accelerated to 90 to 100 knots—fast enough to expeditiously get home but not so fast as to add strain on the tail rotor or complicate our entry into an autorotation, if one became necessary. In a few minutes, we had closed to a range where we initially had lost comms with the ship and fully expected to hear our controller reply to our calls. However, such was not the case.

Again and again, Boss called over the radio, "Control, Warlord seven-one-five." The only reply was silence and static.

We switched radios, we switched antennas, we started squawking emergency, and we transmitted on guard—no reply. The minutes slowly ticked by. Eventually, we got fresh radar paint on the ship's position, and I started counting down the miles. I kept glancing over at the caution panel. The "TAIL XMSN OIL TEMP" light continued to flicker, but outside, the little fan in back kept turning.

After the initial shock of realizing we were in a very bad spot, I was amazed how calm things got. We just kept flying and calling. At about 40 miles, we started to pick up the TACAN. About five miles closer, we heard a faint, garbled reply from our ASTAC. It took at least three exchanges back and forth before the ASTAC seemed to fully accept we actually were declaring an emergency. When his voice suddenly elevated at least two octaves, we knew we had his attention.

To the ship's credit, they immediately called for emergency flight quarters, turned in our direction, and went hammer-down on both screws. Our other detachment HAC coached the ship on exactly what we expected of them for our recovery. Then we carefully replayed our internal game plan several times. The winds were behind us, and the ship was headed in our direction. When we got in visual range, we would descend to approach altitude, make a right-hand, 180-degree turn, and fly the closest thing we could manage to a no-hover approach into the RSD (rapid securing device) trap.

No ship ever looked better to me than she did that afternoon, as she charged out of the sunset straight at us, leaving an enormous rooster-tail in the water, like some gargantuan hotrod bass boat.

The rest of the event was anticlimactic. We flew our approach profile just as we had briefed, making minimal power changes, and Boss flew it to the deck just a smidge short of the trap. With a little bump on the collective and some forward cyclic to scoot us forward, the probe dropped into the RSD, and we were secure on deck.

We found the combination chip-detector, oil-temp sensor in the tail-rotor gearbox had gotten fouled by some normal gear sludge and had given us a false indication—and a very real scare.

Less than 24 hours later, our crew was back in the air for a double bag of ASW play just off Guam. Just another day at work, this time though, we confined our sightseeing to the occasional sidelong glances at the beach. Although I firmly believe the timing of our tail-rotor-temp light purely was coincidental and had nothing to do with our flight across the crater, the point was well-taken. While there may be a few perfectly sound and acceptable reasons to briefly go beyond or below comms range from your nearest lifeline, curiosity isn't one of them. Leave tourism to the tourists.

Volcano: one

Warlord 715: zip.

Lt. Dova flies with HSL-51.

Decision Making
Assertiveness
Mission Analysis
Communication
Leadership
Adaptability/Flexibility
Situational Awareness

CRM Contacts:

Naval Aviation Schools Command
Crew Resource Management
181 Chambers Ave., Suite C
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(850) 452-2088/5567 (DSN 922)
Fax (850)452-2639
https://www.netc.navy.mil/nascweb/crm/crm.htm

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A Good Wingman

By LCdr. Brian Schrum and Lt. Ken Barnhart

Crew-resource-management discussions are a part of our NATOPS check flights and our periodic Hornet CRM lecture requirements. During CRM training, we review past SIRs, hazreps, and various lessons learned from around the fleet and discuss how to apply those lessons. The NATOPS check gives us the opportunity to test CRM concepts in the simulated environment.

This training gives aircrew a chance to review the seven parts of CRM and how they apply to the single-seat community. CRM conversations during emergency training teach you to back up the pilot with NATOPS procedures and squadron or wing SOP.

The true test comes in the real world, where our use of solid CRM is critical to safety of flight. Fleet-readiness-squadron (FRS) training prepares us with the skills to handle procedures and emergencies by ourselves. However, as I learned during a scenario over Afghanistan this past summer, a well-prepared wingman and knowledge gained from *Approach* articles proved invaluable as my wingman and I brought a degraded aircraft back to the carrier.

Carrier Air Wing Two and USS *Abraham Lincoln* (CVN-72) Strike Group had been operating in the 5th Fleet AOR for nearly four months. We were tasked to support U.S. and coalition forces in Iraq and Afghanistan, primarily through close-air support.

During our final week of Afghanistan operations, an engine problem cut short my time in country. At 25,000 feet, approaching our KC-135 tanker in central Afghanistan, I received a right generator caution. I told my wingman and, in accordance with NATOPS, cycled the generator, trying to recover it. The generator did not come on-line, so I left the generator switch off. Two minutes later and moments from engaging the refueling basket, I received a right airframe-mounted-accessory-drive (AMAD) pressure caution. This caution meant I might have to shut down the engine if more than five minutes from landing. This caution is critical because the AMAD is a mechanism that drives three important functions on the aircraft: hydraulics, fuel boost, and generator power.

I notified my wingman of the new caution. After the successful refueling of both aircraft, we headed home. With more than five minutes remaining until recovery, we decided to shut down the right engine, continue the long transit home on single engine, and restart for recovery. We recovered aboard the ship. After parking the aircraft, our squadron maintainers immediately had me shut down the right engine because oil was leaking out the AMAD bay.

In bringing our aircraft aboard the ship, my wingman and I used every one of the seven CRM skills. What follows is a brief discussion of each and how it pertained to our event that day.

Decision-Making: Our first decision was whether to return to the ship or divert. Based on the potential precautionary shutdown of the right engine, we looked to return to the ship where our maintainers could diagnose the problem, fix it, and return the aircraft to FMC status. A divert would get the jet on deck in the least amount of time, but we had an emergency that mandated a "land as soon as practical," so I flew single engine to the ship. We also decided to keep the section together, rather than sending me home as a single. Section integrity allowed my wingman to back me up and act as another set of eyes and ears. We had to decide how long to keep the engine on-line. NATOPS tells the aircrew to secure the associated generator, which was off-line because of the inoperative generator. This step relates to the excessive amount of heat the generator could output with an AMAD pressure caution. Having received the AMAD pressure caution just before tanking, I kept both engines running until my wingman and I received our fuel. When flowing off the tanker toward home, I shut down the right engine—to restart for landing as per NATOPS. In hindsight, the decisions we made above seemed to have been the right ones because we returned the jet aboard the ship. Had the emergency become more severe or developed into a compound emergency, then the circumstances would have changed to "land as soon as possible."

AMAD chip detector (not supposed to have all the metal filings on it).

AMAD bay with white generator (normal) and black AMAD connected to the bulkhead (supposed to be white as well).

AMAD oil transducer cap blown off of the bottom of the AMAD.

Assertiveness and Communication: My wingman demonstrated these skills exceptionally well. After ascertaining the seriousness of our situation, my wingman coordinated for another section to cover the final portion of our tasking. He communicated our problem with the in-country coalition controllers, and worked a gameplan that cleared a block of airspace for us on our return. We didn't know what altitude would work, given my single-engine profile and weapons load. He proactively worked an organic-tanking plan to have fuel available near the ship if we had to deviate for weather or burn through more fuel than initially expected. Not only did he communicate well with out-

side sources, but within our section, he had our pocket checklist ready to walk me through each step of our emergency. His efforts allowed me to concentrate on flying. The big three of aviate, navigate and communicate were in my thoughts.

Mission Analysis: Every successful flight begins with a good brief of all administrative and tactical aspects, including what initial actions should be done in case of an in-flight emergency. Our mass brief and section brief covered the basics, and we executed as briefed. We were well-prepared for this flight, and it paid dividends. Another important aspect of mission analysis came in the form of a previous *Approach [March-April 2008, view at: http://www.safetycenter.navy.mil/media/approach/issues/marapr08/default.htm]* article written by Lt. Rob Littman from VFA-81. His article outlines his experience in the hot and humid climate of the Arabian Gulf and Northern Arabian Sea while single engine. This article was required reading for our air wing before we began operations in the Gulf. While stepping through my emergency, I recalled his lessons learned about trying to tank single engine: it has risks and can revert to a degraded flight-control mode if you aren't careful. If there would be any tanking required, I was prepared to start the right motor again and get fuel, rather than roll the dice and hope I could get gas with a single-engine aircraft. Hazreps can happen to you, as written by Ltjg. Brett Carstens in that same *Approach* issue. The air wing and squadron used the time before our combat missions to discuss hazreps pertinent to the environment, and it paid dividends throughout our deployment.

Leadership: As flight lead, I had ultimate responsibility for the decisions being made for our section of aircraft. The best way to lead in this scenario is to comprehend what has happened, formulate a gameplan, stick to NATOPS procedures, make an informed decision and go. This does not mean your problem-solving stops. You must continue to evaluate the circumstances as the flight goes on and new information becomes available—until you are on deck. Good leadership skills are not just reserved for the flight lead or pilot at the controls of an emergency aircraft. Wingmen can demonstrate good leadership skills, provide timely information

Situational awareness is only as good as the accuracy, amount and timeliness of information for the pilot to process.

to the flight lead, and offer suggestions and feedback. My wingman did exactly what he was supposed to, and even more. While not a qualified flight lead himself, he recognized the hazards, provided assistance, and through his communication skills, got our section initially moving toward a recovery. This experience and the knowledge gained is but a small part of his overall first-cruise experience. He gained the confidence that, as a flight lead, he can assess a situation and make an informed decision, all done during a combat sortie. This experience is something that no simulator or amount of CRM chalk talk could match.

Adaptability and Flexibility: Any emergency, whether on deck or airborne, requires some form of adaptability and/or flexibility. In our case, flying over Afghanistan, we recognized we couldn't continue in-country and needed to RTB as soon as practical. Lumbering home single engine over a couple hundred miles is not the most fun way to spend an afternoon, yet it was the situation we were in. We had to flex our altitude accordingly to maintain level flight with only one engine. Compartmentalization was a key briefing item for our squadron and air wing during our operations. Concentrating on only one portion of the flight at a time, such as admin, tanking, or carrier operations, allows us to complete a task at hand before moving on to another. An important aspect of adaptability and flexibility is the actions taken when this compartmentalization breaks down, when the unexpected happens and a wrench is thrown into your plans. An in-flight emergency may change the priority and drive you to handle an emergency before continuing on with the rest of the mission. We had requested to work a gameplan for another section of aircraft to cover our remaining time in-country to help our Soldiers. We had stepped into an area where things were not going as briefed, but we adapted to our new plan.

Situational Awareness: The biggest challenge posed to our section, after the engine was secured, was to see if we could make the next available recovery, based on time and distance. The single-engine performance of the Hornet is solid, especially at medium altitudes, which is where I could fly straight and level. With the port engine at mil and the starboard engine secured for landing, we found our cruising speed was close to two engine, max-range profile, so we decided we could make the next available recovery. We coordinated through the controllers in Afghanistan to relay to the E-2C that we were coming home and might need fuel before commencing our approach. Having just come off the tanker, we figured there would be no problems with fuel at our current pace. But, if weather became a factor, we wanted to be sure the conditions were set for success. Situational awareness is only as good as the accuracy, amount and timeliness of information for the pilot to process. Fortunately, in the Hornet, we have tools available to give us real-time and predictive information. I knew, based on the AMAD-pressure caution, that something had gone wrong with that system, and I could follow the procedures to keep my jet flying. I instantly knew how far it was to the ship and to my diverts, as well as an up-to-the-minute understanding of how long it would take to get there. All these things increased my level of situational awareness, not to mention a very helpful wingman and CATCC representative at the ship ready to help.

CRM is an effective tool in the single-seat aircraft. Effective CRM can be accomplished in many ways: using the CRM steps outlined in NATOPS, applying previous lessons learned, conducting NATOPS checks in the simulator, and having periodic ready-room discussions. However, nothing compares to a real-world scenario where the decisions we make could have wide-ranging effects. Only though a solid training plan can we continue to hone these skills and keep them sharp, so that when something unexpected happens during your flight, you and your wingman have the skills and training necessary to recover your aircraft.

LCdr. Brian Schrum and Lt. Ken Barnhart fly with VFA-34.

LCdr. Chuck Best, an advanced flight-training-instructor pilot at VT-86, was conducting a T-45C functional-check flight (FCF) in military airspace about 30 miles offshore in the Gulf of Mexico.

During engine acceleration-and-deceleration checks at 40,000 feet, his only engine had a compressor stall. He immediately applied compressor-stall NATOPS procedures to the rapidly decelerating engine, but seconds later, the engine flamed out. He continued the compressor-stall checklist, secured the engine, and tried an immediate airstart, which also failed. The aircraft remained flyable with ram-air-turbine extension.

While maintaining the aircraft in an airstart profile, with airspeed greater than 250 knots and the engine rpm above the minimum, he tried two more airstarts on the now gliding Goshawk. The fourth airstart resulted in a successful relight at 28,000 feet—2 minutes and 33 seconds after the initial compressor stall.

After completing the successful-airstart checklist, LCdr. Best declared an emergency with Pensacola Approach and returned to NAS Pensacola. He flew a precautionary approach to an uneventful landing.

BRAVO Zulu

Capt. Stacy Jones, USAF, a VT-10 primary flight-training-instructor pilot, was instructing a student naval-flight officer (SNFO) on a T-6A contact flight. While operating in a local military-operations area (MOA), they had a complete failure of the air-data computer (ADC). Without the ADC, the airspeed, altitude and vertical-velocity indicators stopped functioning in both cockpits. Capt. Jones declared an emergency and headed to their home field of NAS Pensacola, Fla.

During the troubleshooting, she was unable to get her primary instrumentation to work and decided to shoot a visual, straight-in approach, using only standby instruments. Capt. Jones' superior airmanship avoided a potentially catastrophic situation.

LCdr. Justin Hawkins, a primary, flight-training-instructor pilot at VT-4, was flying with a student naval-flight officer (SNFO) on a T-6A visual-navigation-training flight. While on the low-level route from NAS Pensacola, he and the student heard and felt airframe vibrations, with no secondary-instrument indications in the cockpit.

LCdr. Hawkins departed the low-level environment, climbed, and began to troubleshoot while diverting to Monroeville, Ala. The vibrations remained even as they slowed and configured for landing. LCdr. Hawkins made the landing at Monroeville.

After shutdown, the aircrew noticed a burning smell coming from the engine compartment. The postflight inspection located a smoldering, oil-soaked, maintenance rag stuffed between the starboard side of the engine compartment and the wheelwell; it had gone unnoticed on preflight. Inspection of the starboard engine compartment door is not required on preflight per NATOPS or standard-operating procedures. LCdr. Hawkins' quick thinking and professional actions averted a potential mishap.

Lt. Justin Wilson, a VT-2 primary, flight-training-instructor pilot at NAS Whiting Field, Fla., was standing runway-duty officer at Navy Outlying Field (NOLF) Brewton. Five T-34C aircraft occupied the landing pattern, conducting normal and simulated emergency-landing procedures.

A student pilot reported, "Gear up for training," at the 180 position, in accordance with low-altitude, power-loss-in-the-pattern (LAPL/P) procedures. After checking the gear was up, and the aircraft was on profile for the simulated emergency, Lt. Wilson responded, "Report gear down or waveoff," in accordance with Training Air Wing Five's fixed-wing operating procedures.

As the aircraft approached short final and rolled wings-level with the gear still up, the pilot reported, "Gear down and locked."

Lt. Wilson saw the gear still in the up position and replied, "Negative. Wave off… wave off… wave off!"

The pilot immediately executed a waveoff and rejoined the landing pattern. Without Lt. Wilson's intervention, the aircraft would have landed gear up, severely damaging the aircraft and potentially injuring the aircrew.

Head to Head With a C-17

By Lt. Erik Phelps

Flying as a JO doesn't get much better than night, pilot-proficiency DFW (dedicated field work), in the P-3 around the Hawaiian Islands. To capture the day-to-night landing transition, takeoffs typically coincide with magnificent tropical sunsets. These, instrument-approach, round-robin flights only have flight station and observer crew aboard. We prepped for an expected great night of flying.

Everything at the first field went smoothly. As we arrived at our second destination, Kona International Airport, we had the pattern to ourselves. This was great news because Kona has a 10,000-foot runway built out of lava rock on the corner of the Big Island of Hawaii. Water borders three sides. It's a perfect field for training, as long as you keep an eye out for the occasional island-hopper commuter.

Within five minutes, our fortunes changed. A heavy Air Force C-17 Globemaster checked in; they apparently also wanted to do night-proficiency work. C-17s are so big they only are authorized to bounce at Kona and two other airfields in the state of Hawaii. We don't enjoy flying with or near these enormous beasts because they routinely put out massive amounts of wake turbulence. For the P-3, this means getting thrown around like a rag doll. We had had extensive training on their wake turbulence since they became prevalent in Hawaii, and the SOP was to give them a wide berth.

On this night, the C-17 jumped into the pattern ahead of us and made our life difficult by routinely departing the pattern to the north on their downwind (runway 17 was in use) and shooting modified, short, visual approaches. A few times, tower cleared us in front of them for our bounces, which worked well for us.

Each time the C-17 requested a modified visual, the tower controller would reply, "Tiger 12 heavy, approved as requested."

On one of our last passes at Kona, we found ourselves closely following the C-17 in the pattern. As we rolled out on downwind, they were turning to their base leg. I heard their pilot say, "Request at the completion of this touch-and-go, depart for a teardrop approach to runway 17."

I tried to work out this visual concept in my mind, but it didn't make sense. How could he depart on takeoff, then come all the way around for an approach to the runway in use, and call that a "teardrop"?

As I contemplated his plan, the sleepy (my opinion) tower controller replied, "Tiger 12 heavy, approved as requested, clear to land runway 17."

We hacked our clock and extended our downwind to make sure we touched down the usual two minutes after the C-17. My copilot was conducting a right-seat, touch-and-go, and I was on the radios, doing copilot duties from the left seat. Tower cleared us for a touch-and-go. As we were on short final, tower came on the radio. "Tiger 12 heavy, say position."

The C-17 reported they were south of the field, "coming back around."

That's odd, I thought, but then dismissed the thought as we crossed the numbers; I focused on the task at hand. As I backed up the copilot on his touchdown, we reset the flaps and trim and prepared to set power. At that instant, I experienced the unnerving feeling of having the landing lights of a 400,000-pound aircraft shine directly into our flight station. I looked up and became fixated on an enormous C-17 on a short final to runway 35, menacingly bearing down on us. I instantly realized what had happened: He was shooting a low approach to the opposite runway. Calculating he would turn downwind, I continued with our touch-and-go.

We were climbing away and headed directly at the monster in front of us. Unsure how to proceed with a 3,000-foot volcano on our left and a C-17 aimed right at us (that I assumed soon would be turning to our right), I told the copilot to continue straight ahead and reduce the climb. Tower came over the radio and said, "Eagle 44, turn immediate right downwind."

The problem with this command was that the C-17 probably also felt a little uncomfortable at this point (we have some bright landing lights, too), and he already had started his left turn to make a play for downwind. A climbing right turn for us would take us directly into his path. As my copilot started a right turn, I forcefully took the yoke and kept us heading straight and level.

Before I could get out a word, the tower controller realized his mistake and frantically called, "Eagle 44, continue upwind. Tiger 12 heavy, break left!"

The C-17 roared over us at an estimated 400 feet of vertical separation. Several choice exclamations were uttered in our flight station, as our hearts started to beat again.

I came over tower frequency and probably was a little unprofessional in asking, "Is the C-17 going to continue shooting approaches to the opposite runway while there is traffic in the pattern?"

Tower replied with a short, "Negative."

Immediately after the near-midair, Tiger 12 requested clearance back to Hickam AFB.

This incident generated good discussions in our wardroom. Knowing where every aircraft is in the pattern at all times should be obvious. In hindsight, it is clear to me the C-17 pilot misspoke as to what runway he was requesting a teardrop approach to, and the complacent tower controller did not correct him or notice his mistake until it almost was too late. I could have put two and two together and requested the C-17's intentions from tower.

I looked up and became fixated on an enormous C-17 on a short final to runway 35, menacingly bearing down on us.

I also question my decision to continue with the takeoff once I realized the C-17 was on a low approach. With a 10,000-foot runway, I had plenty of room to abort, even after setting our takeoff power. The decision to rotate was made in a matter of milliseconds and was based on the fact we've all seen many aircraft enter the pattern to a downwind before: the way a traffic pattern is supposed to work. But this was no ordinary pattern entry, and short of the C-17 landing on top of us, aborting would have been the safest option, with no known traffic behind us.

Near-midair collisions are scary, and pilots must be alert to their surroundings at all times. The "big sky, little plane" theory is a dangerous one to live by, even more so when playing chicken with a flying monster.

Lt. Phelps flies with VP-9.

Nothing is uncool or unprofessional about asking tower to "say again" or "clarify intentions of interval aircraft." The somewhat inexact science of flying becomes very exact on the runway.—LCdr. Paul Wilson, P-3 analyst, Naval Safety Center.

Approach's *Jan-Feb 2006 issue focused on midair and near-midair collisions. View it at: http://safetycenter.navy.mil/media/approach/issues/janfeb06/pdf/Jan-Feb06_entire_issue.pdf. —Editor*

By the Way, Base...

We Are on Deck

By Lt. Todd Zentner

Who would have guessed that our crew of three instructors would have to use every ounce of our skill to make it home on a sunny September afternoon?

With high production requirements and aging airframes, functional check flights (FCFs) almost are a daily reality at VAQ-129, the fleet replacement squadron. We were scheduled for an acceptance flight "Alpha" profile of aircraft 557. It had been flown hard in Afghanistan and had spent more than a month in the Viking hangar getting prepped for the flight. ECMO 1 and I had been in the squadron almost two years, and another instructor took the student seat as ECMO 2 (sitting in the ECMO 3 seat) to get current. His seat choice was a decision he never will forget, and one for which I always will be thankful.

We thoroughly briefed the "A" profile and headed to maintenance. After reviewing three volumes of ADBs (aircraft-discrepancy books), we dressed and manned up. Given the situation, I gave us a 40-percent chance of getting airborne. But, the ground checks went smoothly, and we were ready to go.

Once airborne, we experienced an FCF not seen in the Prowler since the '80s, when they were rolling off the production line. The engines were robust and every system tight. At each point, the checks were perfect, including an (unheard of) easy climb to 40,000 feet. I descended and completed checks at 17,000 and 5,000 feet. I turned on APC (automatic power control) and flew a perfectly tuned auto-throttles approach to touchdown. I never had flown a Prowler that performed so well. All that remained was to depart and reenter for the break.

With the field in sight, 4.3 on gas, and clearance for the short initial, we accelerated our slick Prowler for the break on runway 25. At midfield, we rolled into a left break. At about one-third, left stick deflection, we heard a loud bang, and the control stick continued to hard-over left. The plane stopped rolling at 85 degrees, left angle of bank. I forced the stick back to neutral and got no response. With the throttles at idle, we began to descend toward the water at near knife edge. The stick would not move right past center, so with slight, right-rudder pressure and aft stick, the angle of bank decreased to 45 degrees, and the nose began to track up. I reported regaining control, and ECMO 1 loosened his grip on the ejection handle. As we slowed in a climb to 6,000 feet above Smith Island, our crew-resource-management (CRM) training took over.

ECMO 1 asked, "You getting it?"

I told him I was "trying to figure it out."

He said he had the comms and was checking the pocket checklist (PCL). ECMO 2 simultaneously reported, "I got base comms on radio three."

While I diagnosed the flying characteristics of our plane, ECMO 1 coordinated the emergency with approach and scoured the PCL. ECMO 2 told base of the situation and monitored my airwork. In a slow left turn over Smith Island, I had minimal lateral stick control, and when I tried to release it, it drove hard over left. With about 45 pounds of force, I could get it back to center but no farther. With full-right flapperon trim and center stick, I could get enough deflection to counter the left-rolling tendency, but no more. Left turns it was. The rudder and stab authority seemed normal.

After reviewing the PCL, ECMO 1 said, "There is nothing in the book to help."

On the third radio, ECMO 2 worked the problem with the ready room. As we reduced airspeed to 220 knots for a clean, slow flight check, I couldn't counter the left roll and had to accelerate to 250 knots. Being well above safe-approach parameters, our options were a controlled ejection or a dirty, slow flight check. We all agreed to drop the flaps and slats, knowing if we lost control we would be within the safe-ejection envelope.

Unknown to us, the SAR helicopter already was manning up. With tight straps and ECMO 1 gripping the handle, we selected slats down and flaps 20. They came down normally, and with extended rudder and stab throws, I maintained control down to 150 knots. We descended and set up for a straight-in trap on runway 31.

Not wanting to fly over downtown Oak Harbor, we asked for runway 25, but the short-field gear was derigged, and 31 was our only option. As we continued

to descend, we intercepted an eight-and-a-half-mile final directly over downtown. To make matters worse, the PAR was down, the ACLS was unable to lock us up, and the lens on that runway was turned off. We would have to remain at 1,200 feet, tip over at four miles, and descend at 300 feet per mile.

We felt we knew the situation, had a good plan, and were set to succeed. Then at six miles, the master caution began to flash with a HYD SYS light. I scanned the hydraulic gauges and watched both needles of the combined system drop to zero. We were dirty, but we no longer had normal brakes, anti-skid, flapperon pop-ups, or nosewheel steering. Distracted by the hydraulic failure, I let the airspeed drop to 140 knots, and we began an uncommanded left roll at four and a half miles.

I reported, "I'm losing it!" to the crew and added full power with right rudder and neutral stick to regain control.

We were high and fast. I told ECMO 1, "You're pulling the handle if we need to get out!"

ECMO 2 then made his last airborne base call, "At four miles, and we just lost the combined hyds."

I must admit my bucket was spilling. We were light, slick, high, fast, and marginally controllable. As we tried to get lower, we heard, "Paddles contact at a mile and a half. You're high; work it down. One mile, you're high. You're high, wave off, wave off!"

We responded, "We are continuing."

With the short-field gear in sight, I pushed over the nose in a last attempt to get down. With fine deck spotting and a timely "attitude" call from paddles, I set the hook and felt the short-field gear catch on the fly. We came to a stop on centerline and breathed again. The crash crew pinned our gear and stores and chocked our wheels. As we shut down, ECMO 2 reported, "By the way, base… we are on deck," reassuring the ready room that hadn't heard from us in minutes.

As we climbed off the jet, a shower of hydraulic fluid flowed from the middle of the left wing and along the runway, leading to a giant pool under the plane.

The CRM during this event was automatic. When it was all I could do to fly the plane, ECMO 1 instinctively coordinated with approach and got into the PCL. At the same time, ECMO 2 contacted base, backed up the PCL, and backed up my air work. We assessed the situation, came up with a plan and alternatives, evaluated the risks, executed the plan, and flexed accordingly. We didn't pull out a CRM checklist; it just happened. We often use the Swiss-cheese model in looking at mishaps, but I think we can use it here, as well.

The flapperon failed in the down position, versus up, during the break. Excess airspeed in the break helped us maintain level flight. Our low-fuel state prevented delays in the situation and potential total hydraulic failure. We had clear skies, light winds, and local knowledge. We had a senior crew of FRS instructors.

Postflight maintenance inspection revealed a catastrophic failure of the left flapperon actuator. The broken component opened a leak in both the combined and primary hydraulic systems. It was only a matter of time before the hydraulic system would have failed. The broken component also jammed the control arms, which prevented right control-stick movement. However, right-stick deflection would have accelerated hydraulic-fluid depletion. After seeing the damage, our maintenance-control chief replied, "This should have been a crash."

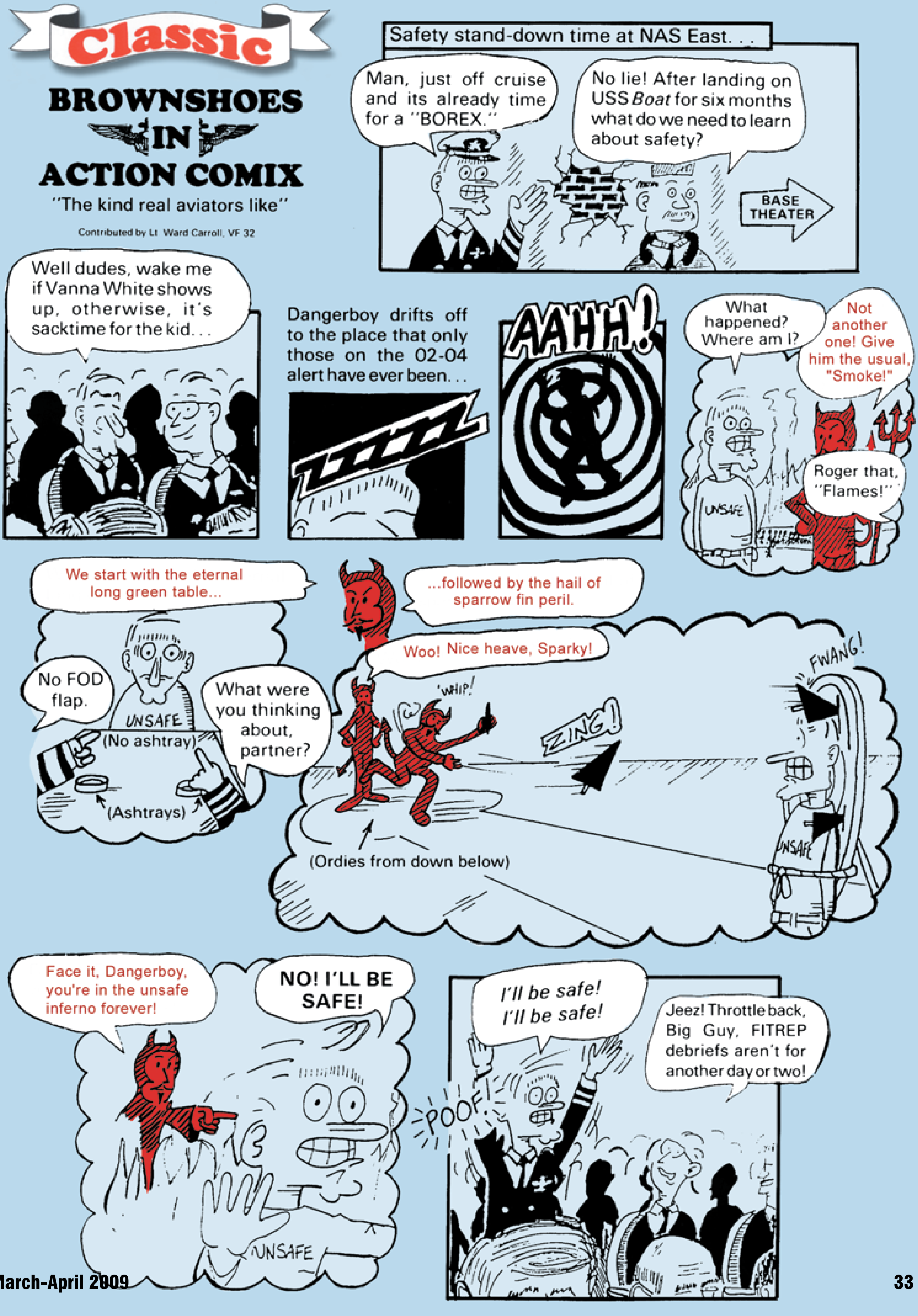
CRM works.

Lt. Zentner currently flies with VAQ-138 and is a CVW-9 LSO.

The crew was awarded The Order of Daedalians Award for distinguished airmanship in an emergency; they also were the AirPac aviators of the year. The pilot and ECMO 1 further received Air Medals, and ECMO 2 received a Navy Achievement Medal.—Ed.

Mishap-Free Milestones

HS-4	13 years	25,000 hours


Classic
BROWNSHOES IN ACTION COMIX
"The kind real aviators like"
Contributed by Lt Ward Carroll, VF 32
Safety stand-down time at NAS East. . .
Man, just off cruise and its already time for a "BOREX."
No lie! After landing on USS Boat for six months what do we need to learn about safety?
BASE THEATER
Well dudes, wake me if Vanna White shows up, otherwise, it's sacktime for the kid. . .
Dangerboy drifts off to the place that only those on the 02-04 alert have ever been. . .
ZZZZ
AAHH!
What happened? Where am I?
Not another one! Give him the usual, "Smoke!"
Roger that, "Flames!"
UNSAFE
We start with the eternal long green table...
No FOD flap.
UNSAFE
(No ashtray)
What were you thinking about, partner?
(Ashtrays)
...followed by the hail of sparrow fin peril.
Woo! Nice heave, Sparky!
'WHIP!
ZING!
FWANG!
UNSAFE
(Ordies from down below)
Face it, Dangerboy, you're in the unsafe inferno forever!
NO! I'LL BE SAFE!
UNSAFE
I'll be safe! I'll be safe!
Jeez! Throttle back, Big Guy, FITREP debriefs aren't for another day or two!
POOF!

When cutting corners becomes routine,

and routine violations become the norm, then they may not be seen as violations at all to a newcomer who perceives, “That’s the way it’s always been done around here.”

The practice becomes the rule, rather than the exception to the rule. Over time, the correct rule is lost. With so much on-the-job training (OJT) conducted in the fleet to train new personnel, routinely cutting corners is a setup for future calamity.

—Dr. Robert Figlock Ph.D